Excellence Weighing Solutions

**Weighing Solutions Guide**

Innovative features

Built-in applications

Useful accessories

# Weighing Solutions

## For more Security and Productivity

METTLER TOLEDO

# **Weighing Solutions Guide for**
# METTLER TOLEDO Excellence balances

**The Excellence balance range from METTLER TOLEDO offers many innovative features, built-in applications and useful accessories which have been carefully designed to meet the needs of our customers around the world. One of which should certainly provide the right answer to your specific weighing process. This "Solution Guide" introduces some of our unique and innovative solutions - our answers to your daily challenges!**

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# **Features overview of the**
# Excellence balance range

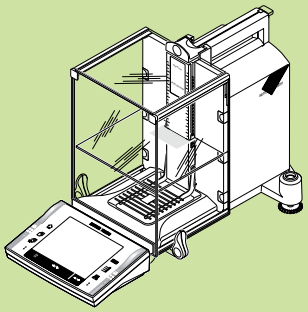
## Excellence Plus XP

### XP Analytical balances

- MinWeigh*
- proFACT
- User management (8 users)
- GxP compliance
- SmartScreen (color touch screen display)
- QM tool box
- LevelControl
- BalanceCheck
- SmartSens
- SmartGrid
- AntiStatic kit*
- ErgoClips*
- Connectivity*
- LabX balance - Data & instrument management*

**Built-in applications**

- Weighing
- Statistics
- Formulation
- Piece counting
- Percent weighing
- Density determination
- Differential weighing

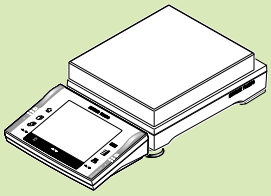


### XP Precision balances

- MinWeigh*
- proFACT
- User management (8 users)
- GxP compliance
- SmartScreen (color touch screen display)
- QM tool box
- LevelControl
- BalanceCheck
- SmartSens
- MPS weighing pan*
- Connectivity*
- LabX balance - Data & instrument management*

**Built-in applications**

- Weighing
- Statistics
- Formulation
- Piece counting
- Percent weighing
- Density determination
- Differential weighing
- Dynamic weighing



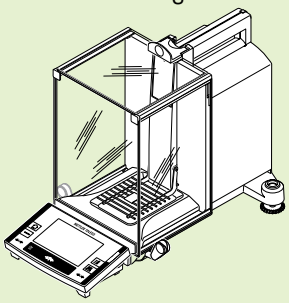
## Excellence XS

### XS Analytical balances

- FACT
- GxP compliance
- Touch screen
- SmartGrid
- ErgoClips*
- Connectivity*
- LabX balance - Data & instrument management*

**Built-in applications**

- Weighing
- Statistics
- Formulation
- Piece counting
- Percent weighing
- Density determination

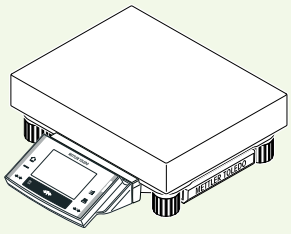


### XS Precision balances

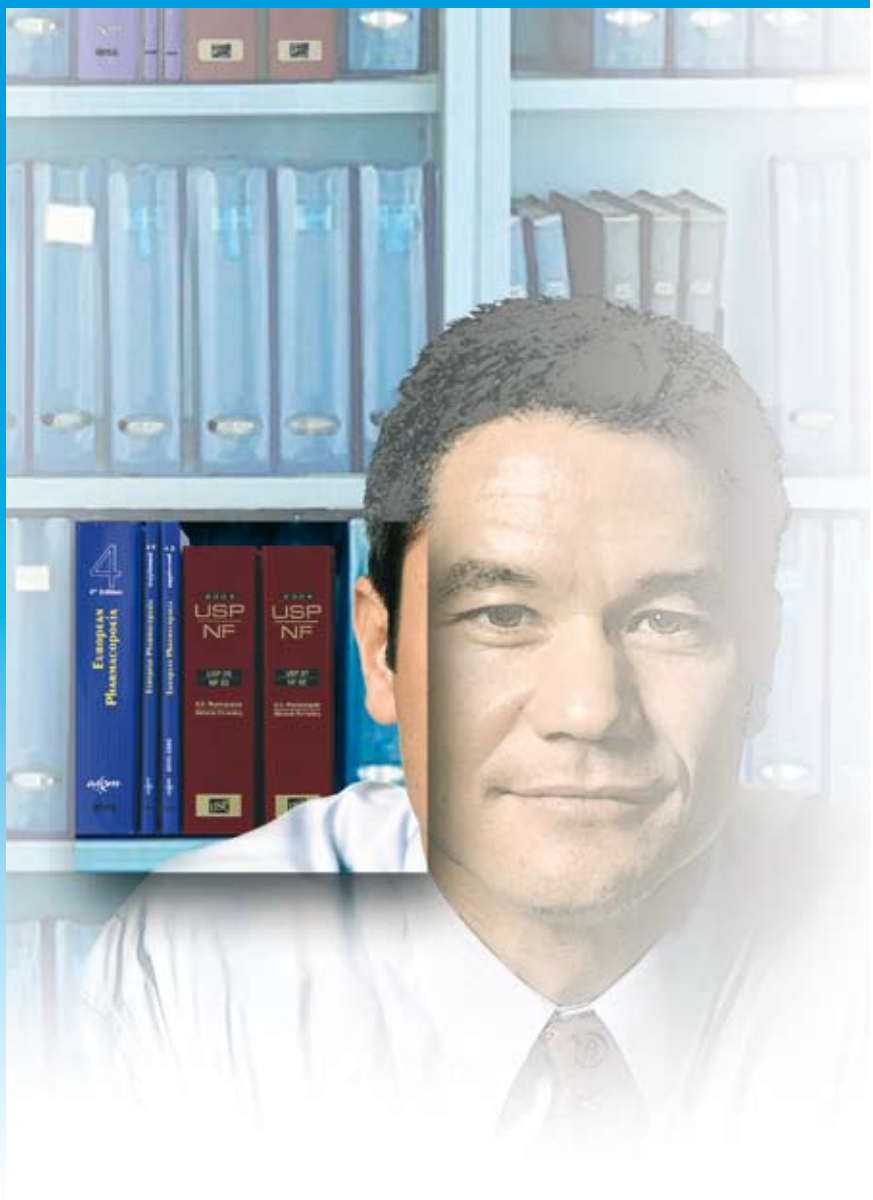
- FACT
- GxP compliance
- Touch screen
- MPS weighing pan*
- Connectivity*
- LabX balance - Data & instrument management*

**Built-in applications**

- Weighing
- Statistics
- Formulation
- Piece counting
- Percent weighing
- Density determination
- Dynamic weighing



* Optional accessories / services




1

# 1. Regulatory Compliance

# 1.1 Does your SOP require you to level the balance at regular intervals?

Could you imagine a balance that has a self-checking system for level adjustment? Our **Excellence Plus XP** is equipped with a **LevelControl** system, which automatically warns when the balance is not leveled correctly.

1.1

**LevelControl**

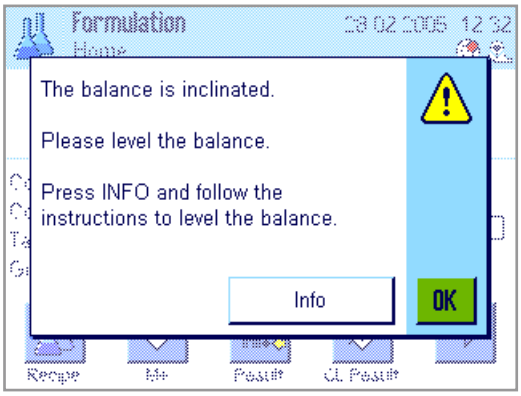
## Your challenges

- A balance can be moved out of level for many reasons.
- If the balance is not correctly leveled, the performance of the balance cannot be guaranteed (sensitivity offset is increased).
- Companies working to guidelines such as ISO and USP may be required to check that the balance is leveled each time before use.

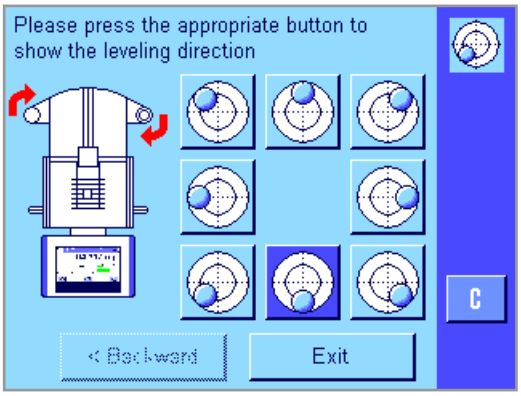
An optical sensor is always keeping eye on the level.

## Our solutions

- The **LevelControl** system of the **Excellence Plus XP** automatically detects if the balance is leveled or not.
- When the balance is inclined, **LevelControl** gives a message and/or an acoustic warning.
- The balance gives you leveling instructions on the display.
- The leveling status is always stored in the Adjustment History.
- The leveling status can be printed in the header, in the results or with each single weight value, in every application.




When the balance is out of level, a warning message appears.




An onscreen graphic shows you how to rapidly level your balance.

```
------- Weighing -------
10.May 2006          18:54
User Name             Home
Balance Type       XP205DR
WeighBridge SNR: 12345678
Terminal SNR: 1234567890

Balance is levelled
                 0.00000 g

Balance is levelled
                 7.58942 g

Balance is inclined
                 7.58946 g
```

Printout example

## Your benefits

- In the daily weighing process, you no longer need to check whether the balance is leveled.
- The leveling status can be printed out or stored in the balance memory. The traceability of instruments and the validity of weighing results are guaranteed.

## Availability

The **LevelControl** feature is standard on all **XP Analytical** and **XP Precision balances**.

# 1.2 Do you have to fulfil USP* minimum weight requirements?

MinWeigh

## Your challenges

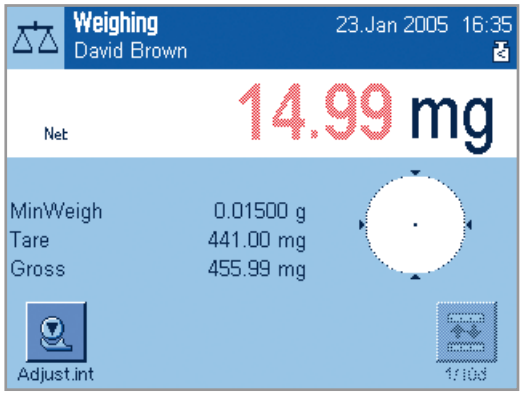
- When you dispense **small amounts of sample**, are you sure your weighing results are always correct? Sometimes weighing processes are carried out at between 1 % and 10 % of a balance's weighing capacity. But it is precisely in this range that the greatest relative measurement uncertainties occur.
- If the weighing value is less than the **minimum weight**, the weighing result cannot be guaranteed to be within process requirements. In a regulated environment, the measurement series must be repeated, and valuable substances may be lost. In the worst case, invalid values could cause production stops, costing millions.
- **Minimum weight** depends on the requirement of each regulation (e.g. USP regulation requires an accuracy of better than 0.1 % with 3 times the standard deviation).

## Our solutions

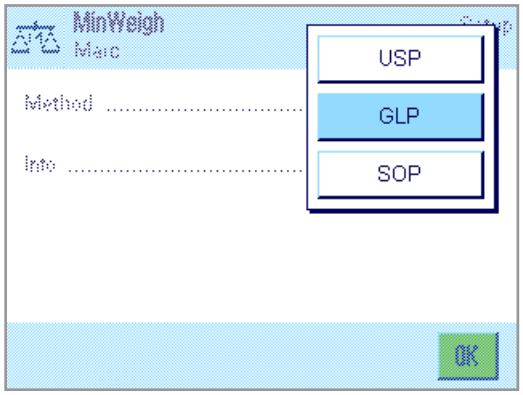
- The **MinWeigh application** of the **Excellence Plus XP** determines the **minimum weight** according to your compliance regulations.
- **Minimum weight** is determined in the actual working environment where the balance is installed.
- If the value is below the determined **minimum weight**, the color of the displayed value is **red** to warn that the current value is not sufficient to ensure tolerances are met.
- **An asterisk** is printed out next to the result if the value is below the **minimum weight**.
- Up to **3 different methods** can be determined and stored. Every user can therefore recall the unique method which is required.

1.2

MinWeigh




When the displayed value is below minimum weight, it is red to signal a violation.




Up to 3 different methods can be configured.

```
------- Weighing -------
User Name          Home

MW-Method           GLP
RefTare       1.00000 g
MinWeigh      0.01000 g
   T          1.01787 g
   N          1.00145 g
   G          2.01932 g
```

Printout example

## Your benefits

- With **MinWeigh** you can always be sure that each result fulfills the requirements, preventing out of spec results.
- **MinWeigh** saves time and prevents waste of precious substances. Saving money, and ensuring compliance.

## Availability

**MinWeigh** is a built-in application for **XP Analytical** and **XP Precision balances**. It must be activated by a certified MT service technician at the installation site. After programming the balance, the service technician issues a "MinWeigh Certificate" documenting the test measurements and tolerances, as well as the corresponding tare and minimum weight values.

*USP: United States Pharmacopeia

# 1.3 Do you need different user authorization levels?

## Your challenges

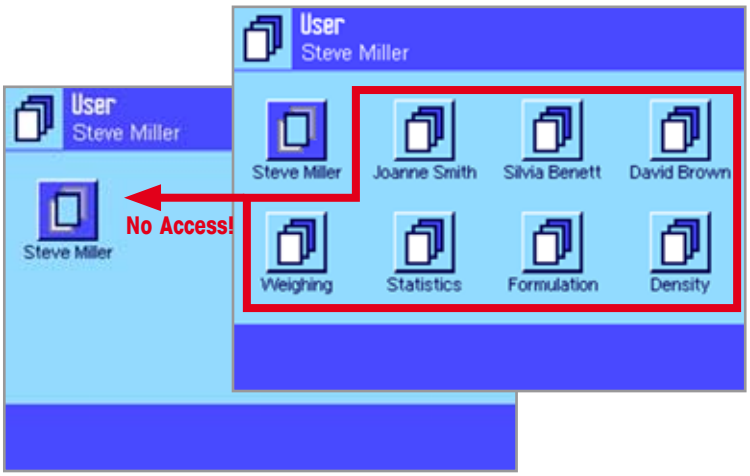
- Weighing results are often just the first stage of a much larger laboratory process. For regulatory compliance, changes to an instrument's settings might influence the validity of the weighing results and so must be strictly controlled. And each change to an instrument must be documented for traceability of the instruments change history.
- In a regulated laboratory, the administrative rights are described for each user in detail.

Depending on user level, detailed individual access rights can be configured (by the administrator).

## Our solutions

- Individual user settings can be configured for **up to 8 users**. The "Administrator" can switch off any unnecessary user settings.
- The **User Management** function of the **Excellence Plus XP** enables the "Administrator" to control each user's access rights. Those access rights can be flexibly configured depending on each user's level. (E.g. User A can execute an adjustment using an external weight or can use different applications like "Weighing" or "Statistics" freely. Whereas User B can only use one application and is not permitted to make any changes to parameters or instrument settings.)
- Individual access rights can be set by the administrator, depending on the responsibilities of the users.
- Each user setting can be protected using a password.
- The "Administrator" can also switch off unnecessary applications in each user setting.
- In the change history, the last 50 actions are automatically stored, and can be printed out as required.

Traceability is guaranteed with the Change History.




Up to 8 users are available in the system and unnecessary users can be switched off by the "Administrator".

## Your benefits

- With the **User Management** function, you can rule out any unauthorized operation or changes to equipment settings.
- Traceability of the balance is guaranteed.

## Availability

The **User Management** function is available in all **XP Analytical** and **Precision balances**.

XS analytical and precision balances have only 1 user. Simple password protection of the balance is possible.

# 1.4 Do you have to comply to 21 CFR part 11?

## Your challenges

- You need laboratory software to connect balances in your laboratory to a network. The software must be connected with a LIMS for comprehensive data management.
- Instruments need to be controlled remotely by the software, and all data needs to be checked directly from the office. At the same time, **audit trails, electronic signatures and approvals/sign-off of documents** must be fulfilled for **21 CFR part 11 compliance**.

**LabX pro** guarantees complete data management in the laboratory and supports **21 CFR part 11** requirements.

## Our solutions & your benefits

- With **LabX pro** there is no need to go to the laboratory to check results. Just start LabX pro on your office PC and you can check results, change methods and review and sign off documents electronically; you don't have to print a single document. And it supports **21 CFR part 11**.
- With **LabX pro**, you can simplify your tasks in many ways: for example you can import your sample data directly from the LIMS, make templates for routine daily tasks, create statistics and control charts automatically.
- Using Rapid Access in **LabX** you do not need to touch a computer. **Excellence balances** allow you to log on to LabX directly from the balance. There is no need to connect the balance to a computer either: Just plug it directly into your company network with the optional **Ethernet interface**.



## Availability and functionality overview

Rapid Access with Excellence Plus XP balances - as if there were no computer.

1

With the **Rapid Access buttons, select the job** you want to carry out from the job queue.

2

**Log on to LabX from the balance touch screen**. The balance prompts you for your user ID and password.

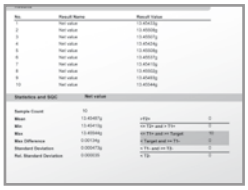
3

LabX **checks the release status** of the balance. You can then follow the **step-by-step** guidance through the job on the balance display.

4

Press the print button to **transfer data**.

5



Retrieve data, get a **printed report** or have data **automatically exported** to a LIMS with LabX connect.

**LabX** is the laboratory instrument control software from METTLER TOLEDO, for **Balances** and **Titrators**.
There are 3 levels: **LabX pro, light** and **direct.**

| | 21 CFR Part 11 support | LIMS integration | Rapid Access* | Data management | Remarks |
|---|---|---|---|---|---|
| LabX pro balance | X | X | X | X | Full compliance |
| LabX pro titration | X | X | n/a | X | Full compliance |
| LabX light balance | n/a | n/a | X | X | Complete data management |
| LabX light titration | n/a | n/a | n/a | X | Complete data management |
| LabX direct balance | n/a | n/a | n/a | n/a | Direct data transfer to Excel, Word etc. |

LabX balance can control METTLER TOLEDO XP/XS, AX/MX/UMX, AT/MT/UMT, AB-S(/FACT), PB-S(/FACT), AG, PG-S, SG, PR, SR balances.
LabX titration can control METTLER TOLEDO DL50 Graphix/Rondolino, DL53, DL55, DL58, DL70ES, DL77, DL31, DL32, DL38, DL39 titration systems.

## For more detailed information

Please visit www.mt.com/LabX.

# Your personal notes

2

# 2. More Security

# 2.1 Are you troubled by static electricity?

**Static electricity** is one of the major factors affecting good weighing results.
Are you weighing different powders using plastic or glass containers?
You might have to consider the effects of static electricity.
**The optional AntiStatic kit for the XP Analytical** offers the most effective and fastest solution to ensure **accurate weighing results**, even from critical or lightly charged samples.

## Your challenges

- Insulating materials such as plastic or glass are affected easily by static electricity, which can generate an **electrostatic force**. This force causes unstable weighing results; the display value may keep changing and never settles.
- The weighing result is not only unstable, but might also be wrong, since static forces can cause weighing errors of plus or minus several milligrams!
- Powdery samples tend to be scattered or stick to the tare container due to static electricity. It is not only difficult to handle, but it can also lead to cross-contamination. If the sample is toxic or harmful, this could be dangerous to the operator.

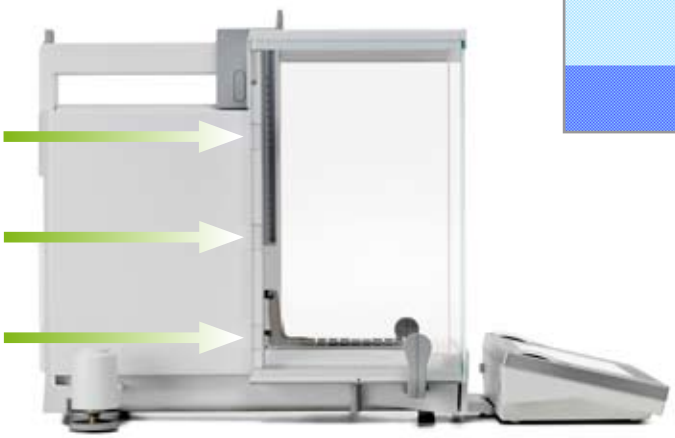
Positive & negative ions are generated, **without air turbulence!**

## Our solutions

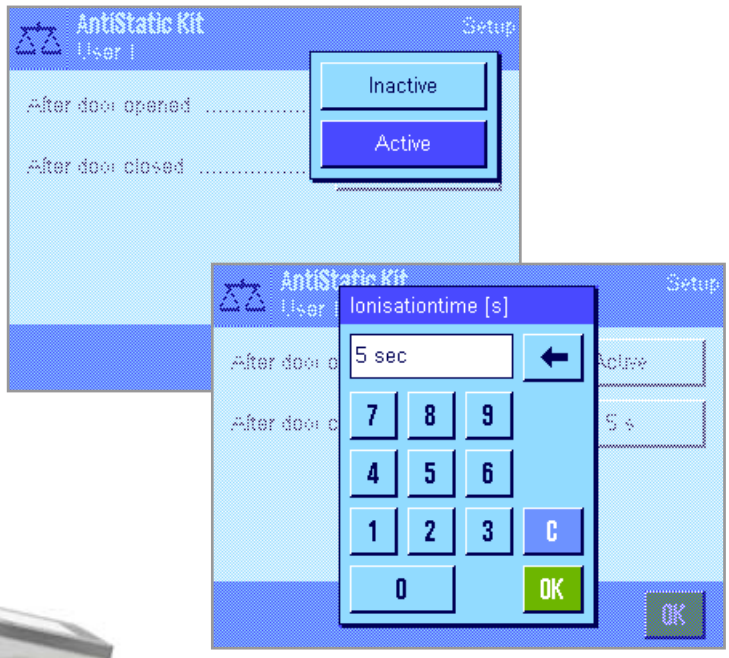
- For **XP Analytical balances**, the **built-in AntiStatic kit** is available as an optional accessory.
- The **AntiStatic kit** can be fitted in six different positions to the draft shield (depending on the sample size and shape, and whether right or left handed).
- Ionization can be activated automatically in response to opening the draft shield door or can be set manually to work as required.

2.1

**AntiStatic kit**



The **AntiStatic kit** can be positioned at 3 different heights*, **left side or right side** (6 places in total).
The middle position is recommended for most cases.




Ionization is synchronized with the draft shield movement. It is activated when the door is opened and/or after the door is closed. Both ways can be configured flexibly, together with time activation (we recommend to set the "Ionization time" less than 5 seconds for faster weighing result).

## Your benefits

- The **AntiStatic kit** for **XP Analytical** generates positive and negative ions evenly, and due to its high voltage the static electricity of the sample or tare containers can be discharged **within a few seconds**.
- The **AntiStatic kit does not** generate air turbulence, which could cause powdery samples to rise into the air. The risk of cross-contamination is therefore reduced to a minimum.
- Thanks to complete integration with the balance, the antistatic kit is activated automatically with door movement (i.e. you don't have to operate the **AntiStatic kit** manually for every weighing).
- This results in extremely quick, efficient and even more accurate weighings, **with maximum security of sample, user and results**.

## Availability and ordering information

The **built-in AntiStatic kit** can only be installed with the **XP Analytical balance** as an optional accessory.

| Accessories | Description | Part No. |
|---|---|---|
| AntiStatic kit | Built-in AntiStatic kit for XP Analytical balance, with power supply | 11107761 |
| | Optional second point-electrode for AntiStatic kit | 11107762 |

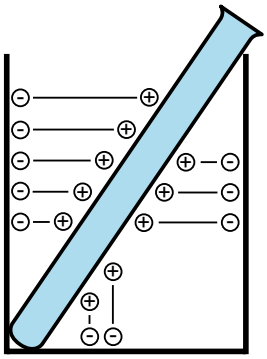
## Tips and recommendations

- For the Excellence XS Analytical balance or other balances, we recommend using the **Universal AntiStatic kit**. This also generates positive and negative ions evenly, and causes no air turbulence.

**Universal AntiStatic kit** can be placed freely.

| Accessories | Description | Part No. |
|---|---|---|
| Universal AntiStatic kit | Universal AntiStatic kit complete (U-shaped), including power supply | 11107767 |
| Optional U-shaped electrode | U-electrode for Universal AntiStatic kit | 11107764 |
| Optional point electrode | Point electrode for discharging small samples | 11107765 |
| Power supply | Power supply for Universal AntiStatic kit (required for U-shaped electrode and point electrode) | 11107766 |

- To reduce the influence of static electricity, covering a statically charged sample or tare container with a metal cage is also effective, due to the **"Faraday effect"**.
- Our **ErgoClips** offer an additional help for stable results. The **AntiStatic kit + ErgoClips** offer the best solution against static electricity.
- For more detailed information on **ErgoClips**, please refer to chapter 2.2.



The electrostatic force lines are screened by the basket.

**ErgoClips** reduce the influence of static electricity.

# 2.2 Do you want to weigh directly into various tare containers?

## Your challenges

- Some typical laboratory tare containers are difficult for weighing because of their odd shape.
- Samples are sometimes spilled because of unstable and/or narrow tare containers.
- One step dosing directly into the tare container offers less contamination risk and minimizes loss of sample, enabling faster dosing procedures.

## Our solutions & your benefits

- We offer various type of weighing accessories called **"ErgoClips"**, which can be fixed to the grid weighing pan on **XP/XS Analytical balances** in order to make your weighings faster and easier.
- **ErgoClips** hold tare containers securely and allow you one-step dosing, directly into the tare container on the balance.
- The **ErgoClips** can reduce the influence of static electricity, thanks to the **"Faraday effect"**.

## Availability and ordering information

**ErgoClips** are fitted to the grid pan of **XP/XS Analytical balances**.

**ErgoClip Basket small**
**Part No. 11106747** **1**

Suitable for several test tubes and syringes of different sizes.
The basket shape reduces the effects of static electricity.
**This ErgoClip is included with all XP/XS Analytical balances.**

**ErgoClip Titration Basket**
**Part No. 11106746** **2**

Suitable for bigger tare containers, like Titration beakers.
The large basket reduces static electricity effects and ensures secure placement.

**ErgoClip Weighing Boat**
**Part No. 11106748** **3**

Suitable for lab weighing boats.
The basket shape reduces static electricity effects.

**ErgoClip Round Bottom Flask**
**Part No. 11106746** **4**

Suitable for various sizes of round bottom flasks, to guarantee secure placement.

**ErgoClip Flask**
**Order No. 11106764** **5**

Specialized ErgoClip for graduated flasks. Due to less surface area, the weighing accuracy is improved, and stabilization time is very short. Suitable for dosing small amount of sample directly into a flask.

**MinWeigh Door**
**Part No. 11106749** **6**

Optional draft shield with a small adjustable opening. Perfect combination with the ErgoClip Flask (5), for even faster stabilization time. The MinWeigh Door allows the minimum weight to be reduced even further.

**ErgoClip Flask micro**
**Part No. 11107879** **7**

Specialized ErgoClip for small graduated flasks. Due to less surface area, the weighing accuracy is improved, and stabilization time is very short. Suitable for dosing small amounts of sample directly into a flask (for XP micro balances only).

**MinWeigh Door micro**
**Part No. 11107869** **8**

Optional inner draft shield with a small adjustable opening. Perfect combination with the ErgoClip Flask micro (7), for even faster stabilization time. The MinWeigh Door micro allows the minimum weight to be reduced even further (for XP micro balances only).

**ErgoClip Tube**
**Part No. 11106784** **9**

Specialized ErgoClip for test tubes.
Due to less surface area, the stabilization time is very short.
Suitable for dosing small amounts of sample directly into the tube.

**Weighing Kit - Set of ErgoClips**
**Part No. 11106707** **10**

Set of ErgoClips 1, 3, 4, disposable aluminum pans, and weighing boats are included.

2.2

ErgoClips

# 2.3 Do you ever weigh hazardous materials?

**SmartSens**: Two optical sensors for hands-free operation are fitted to the XP balance terminal.

## Your challenges

- Do you ever weigh hazardous materials? While handling samples, you might have to operate the balance in a glove box wearing gloves on both hands, as the material could be hazardous.
- Or you might weigh precious substances, where any loss of sample would directly affect costs.
- For weighing these special types of sample, the focus must be on sample handling for both safety and productivity.

## Our solutions

- Thanks to **"SmartSens"**, two optical sensors on the terminal of the **Excellence Plus XP**, basic weighing tasks can be performed without touching the balance.
- The Status bar shows which function of the sensor is activated by means of a green symbol on the terminal.
- For example: Zeroing, Taring the balance, Opening / Closing the draft shield (XP Analytical only), Printouts, M+ and IDs etc... can all be programmed to operate using the SmartSens.
  We also offer the optional external sensor **"ErgoSens"**. It is possible to connect a maximum of two **ErgoSens** per Excellence balance. This means for the **XP balance**, a **maximum of 4 tasks** can be performed with just a wave of the hand. For **XS balances**, **maximum 2 tasks** can be performed at the same time (Tare, Zero or Printout).

## Your benefits

- You can concentrate 100 % on sample handling.
- Contamination risk can be reduced to minimum.

**ErgoSens**: Optional sensor for hands-free operation can be connected using the Aux interface of the XP/XS balance.

## Availability and ordering information

- **SmartSens** is mounted on the operating terminal of both **XP Analytical** and **Precision balances**.
- **ErgoSens** can be installed on **all Excellence balances** as an optional accessory (up to 2 ErgoSens per balance).
- A **Footswitch** for Aux interface is also available; the same operations as with the ErgoSens can be carried out by foot using the footswitch.

| Accessories | Description | Part No. |
|---|---|---|
| ErgoSens | Optional sensor for hands-free operation | 11132601 |
| Footswitch for Aux | Auxiliary footswitch with selectable function for the balance | 11106741 |

# 2.4 Do you weigh in a hazardous environment?

## Your challenges

- Your place of work is classified as an **Ex Zone 2** and you need a balance with **ATEX** approval to be able to perform weighings there.
- The size of your samples as well as the size of your containers fluctuates from small to large; the readability needed can vary from 0.1 mg to 1 g.
- You need to **print** the results of your formulations. However, you don't want to buy an ATEX printer and want to avoid too many cables.
- Your space is limited, your substance may be toxic, you would prefer to have the terminal of your balance separated from the platform.
- You need a **robust** balance with overload and IP protection.
- Your balance is used by various people: therefore it should be very easy to use.

## Our solutions & your benefits

- We offer a complete range of **Excellence Precision balances for Ex Zone 2** (Category 3G) with 3 platform sizes (S, M and L) and a readability down to 0.1 mg.
- With the **Bluetooth** optional interface you can connect your balance wirelessly to a printer and/or a computer installed in a safe area, up to 10 meters from the balance (chapter 3.5).
- With the terminal on the **stand**, you do not only save space, you also avoid spilling substances onto the terminal.
- This robust balance offers complete **overload protection**. The soil-resistant design has **easy to clean** surfaces and edges.
- Thanks to the large **touch screen display**, operating the balance is easy and intuitive.
- Using an **ErgoSens** you can even operate the balance hands-free (chapter 2.3)
- For integration into existing systems, stand-alone platforms for Ex Zone 2 are also available.

It is possible to use the balance in hazardous areas while printing in safe areas without cable connections thanks to the BT optional interface.



## Availability and ordering information

| XS Ex-Balances | |
|---|---|
| **Models** | **Part No.** |
| XS204SX | 11121620 |
| XS603SX | 11121626 |
| XS1003SX | 11121632 |
| XS5003SXDR | 11121638 |
| XS4002SX | 11121644 |
| XS6002SX | 11121650 |
| XS4001SX | 11121656 |
| XS6002MXDR | 11121674 |
| XS6001MX | 11121680 |
| XS12001MX | 11121686 |
| XS32001LX | 11121704 |
| XS64001LX | 11121710 |
| XS32000LX | 11121716 |
| XS64000LX | 11121722 |

| X Ex-Platform | |
|---|---|
| **Models** | **Part No.** |
| X204SX | 11121623 |
| X603SX | 11121629 |
| X1003SX | 11121635 |
| X5003SXDR | 11121641 |
| X4002SX | 11121647 |
| X6002SX | 11121653 |
| X4001SX | 11121659 |
| X6001MX | 11121683 |
| X12001MX | 11121689 |
| X32001LX | 11121707 |
| X64001LX | 11121713 |

Save space and avoid soiling the terminal using the optional stand.

▶ **http://www.mt.com/Ex**

# 2.5 Is your balance always adjusted correctly?

**Two weights** are installed with XP/XS Analytical balances, making **3 points linearity adjustment** possible (XP/XS Precision balances: 1 weight).

## Your challenges

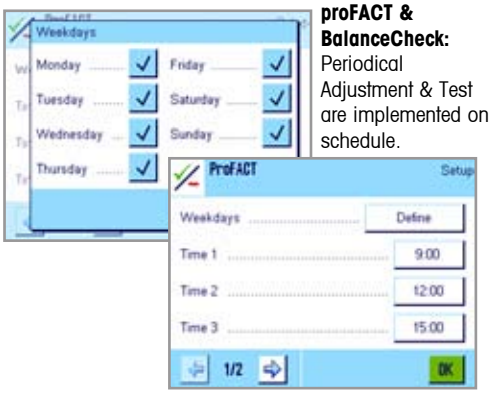
- Temperature changes may affect the sensitivity and sometimes the linearity of electronic balances, causing a difference between the displayed and true value.
- Periodical adjustments or tests at regular intervals may be required according to your SOP.

## Our solutions for XP balances: proFACT & BalanceCheck

- Automatic adjustment using built-in reference weight.
- Temperature changes in the environment trigger the adjustment. Temperature criterion is selectable (0.5, 1, 2, 3 Kelvin).
- An adjustment record can be printed automatically, fulfilling GxP requirements.
- Automatic adjustment using a **built-in reference weight** and a prompt for Adjustment & Test using an **external weight** can be scheduled for a specific time (freely configurable: weekdays, up to 3 times per day).
- Up to 5 external weights for Adjustment & Test can be stored in the memory, and are easily selectable on the display.
- Adjustment & Test history events are recorded in the balance memory and can be printed (up to 50 events).

## Our solutions for XS balances: FACT

- Automatic adjustment using **built-in reference** weights senses temperature changes in the environment.
- Adjustment record can be printed automatically fulfilling GxP requirements.
- Temperature criterion to trigger automatic adjustment is selectable.




**proFACT & BalanceCheck:** Periodical Adjustment & Test are implemented on schedule.

## Your benefits

- In the daily weighing process, your balance is always adjusted correctly. You are therefore freed from time-consuming maintenance duties.
- The Adjustment & Test history can be stored in the balance and printed anytime for traceability (proFACT).

## Availability

- **proFACT** is included with **XP Analytical** and **Precision balances**
- **FACT** is included with **XS Analytical** and **Precision balances**

**2.5**

**proFACT / FACT & BalanceCheck**

## Function overview of Adjustment & Tests for XP and XS balances

| | Automatic adjustment with **internal weights** by temperature change | Automatic adjustment with **internal weights** at a scheduled time | Prompting Adjustment & Test with **external weights** at a scheduled time | Number of programmable **external weights** for Adjustment & Test | Automatic print out of Adjustment & Test records | Adjustment & Test history record in the balance |
|---|---|---|---|---|---|---|
| **XP** | X | Weekdays, up to 3 times per day | Weekdays, up to 3 times per day | up to 5 weights | X | up to 50 records (the last 50) |
| **XS** | X | n/a | n/a | 1 weight | X | n/a |

# 2.6 Do you have cross-contamination risks?

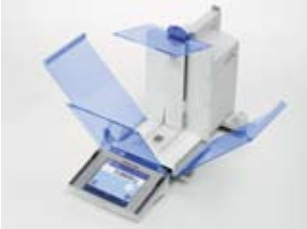
Spilled samples are caught safely.

## Your challenges

- Powdery, liquid or gel samples are spilled on the draft shield or weighing pan.
- These samples could cause **cross-contamination**.
- Daily balance cleaning is time-consuming.

## Our solutions for XP/XS Analytical balances

- The draft shield of the XP/XS Analytical balance is completely detachable.
- Spilled samples fall through the grid pan, and are retained on the drip tray below.
- Weighing pan: **SmartGrid** and drip tray can also be easily removed for cleaning.



Completely detachable draft shield for the XP/XS analytical balance.

Every element can be detached.

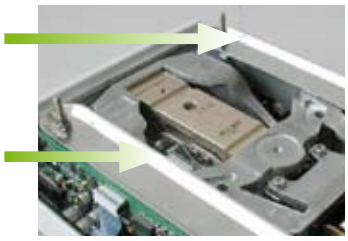
The balance can be moved easily for benchtop cleaning.

2.6

**Cleaning Concept for Excellence balances**

## Our solutions for XP/XS Precision balances

- Straight-forward design for easy cleaning.
- A replaceable in-use protective cover comes as standard.
- **IP54 in use** for trouble-free weighing over many years.



Inner protection for spilled samples

Switches and connectors are sealed securely

Surfaces and edges designed for easy cleaning

## Your benefits

- With our **Excellence** series, cleaning is easier than ever.
- The risk of cross-contamination can be minimized.
- **IP54 in use*** ensures longevity in validated processes and no downtime in production. (* XP/XS Precision balances)

3

# 3. Increased Productivity

# 3.1 Would you like to increase the speed of your weighings?

Innovative **SmartGrid**

## Your challenges

- Air turbulence in the draft shield makes stabilization time slower (e.g. balance is in a laminar flow box).
- Both your hands are occupied with samples or tare containers. Automatic door opening and closing would enable more efficient weighing.

## Our solutions & your benefits

- The innovative grid-shaped weighing pan, the **"SmartGrid"**, prevents air turbulence from acting on the surface of the weighing pan, resulting in shorter and more stable weighing times. Repeatability is also improved.
- Optical sensor: **SmartSens** (on **XP Analytical balances**) opens the draft shield automatically with a simple wave of the hand.
- With **SmartSens** and the automatic door of the **XP Analytical**, there is no need to touch the balance to open the draft shield. Sampling speed is therefore faster than ever.
- Freely configurable door lever of the **XS Analytical** allows direct access of the sample onto the "SmartGrid" weighing pan.

"Open sesame!" - automatic doors. Sampling speed is faster than ever (XP analytical balance).

Intelligent draft shield for XP analytical balance

## Availability

- **SmartGrid** is fitted as standard on all **XP/XS Analytical balances**.
- **SmartSens** and **Automatic Doors** are fitted as standard on all **XP Analytical balances**.

**Dominant hand is free**: Right/Lett door opening (XS analytical balance).

## Other advantages

- For faster weighing results, the less the draft shield is opened, the better the results. With **XP Analytical balances**, the amount that the door opens can be configured (depending on sample size; open 100 %, 75 %, 50 % or 25 %).
- For samples requiring a larger surface area on the weighing pan, a solid stainless steel plate is available for the **SmartGrid** (included as standard on all XP/XS Analytical balances).
- For toxic samples, disposable aluminum pans are also available for XP/XS Analytical balances. Part No.: 11106711 (includes 10 pcs).

Disposable aluminium weighing pan.

# 3.2 Would you like to improve the ease of use of the balance?

## Your challenges

- It can be time-consuming to perform special weighing tasks (e.g. density measurement, statistical weighings, dynamic weighings etc…) with a conventional electronic balance.
- You would like to speed up the weighing process and to feel more confident using the balance.
- You have different balances used by people with different levels of experience. Therefore you need instruments with an intuitive and easy user interface.

## Our solutions & your benefit

- The **Excellence balance range** offers simple touch screen operation and a dialogue oriented software guide enables you to perform even complicated applications easily and intuitively.
- Throughout the **Excellence balance range**, the user interface is the same. If you understand the operation of one Excellence balance, you can operate them all. **Know one, know all.** Less time for operator training.
- The major languages (English, French, German, Spanish, Italian, Japanese and Russian) are available in the software.
- For the **Excellence Plus XP series**, up to 8 display colors are selectable. You can identify which user settings are active at a glance.
- The XP's SmartTrac weighing-in aid has red and green indicators for fast and safe weighing.

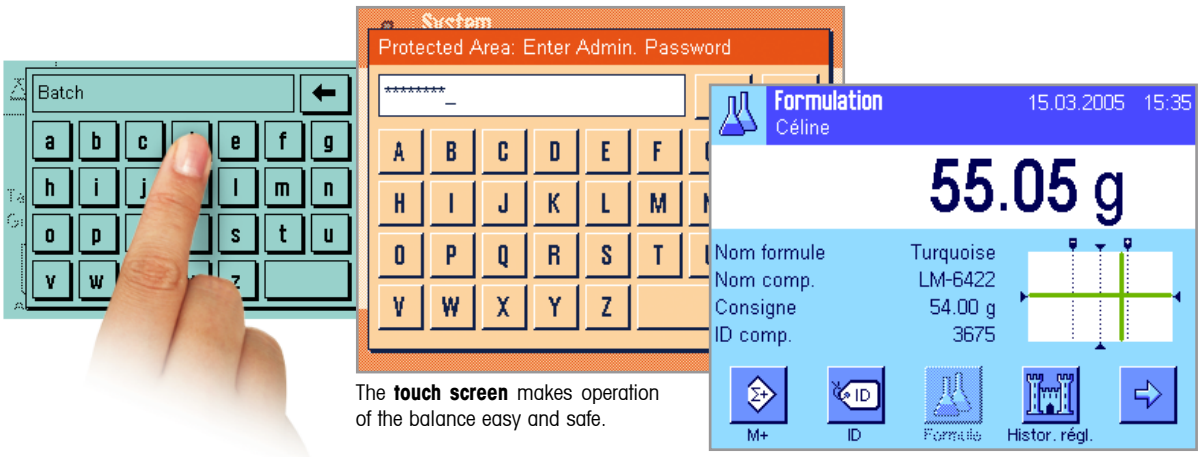
Touch screen operation makes your weighing processes much easier.

## Availability and functional overview

| Series | Touch panel operation | 7 languages | Color screen | Display size | Delta/ SmartTrac |
|---|---|---|---|---|---|
| **Excellence Plus XP** | X | X | 8 colors are selectable | 117 x 87 mm | SmartTrac |
| **Excellence XS** | X | X | n/a | 110 x 57 mm | DeltaTrac |

3.2

**Touch Screen Technology**




The **touch screen** makes operation of the balance easy and safe.

# 3.3 Are you looking for software to manage weighing data?

## Your challenges

- To manage and control a large amount of weighing data, you need powerful data management software for your laboratory.
- The software should be flexible, easy to use and it must ensure 100 % data security and traceability.

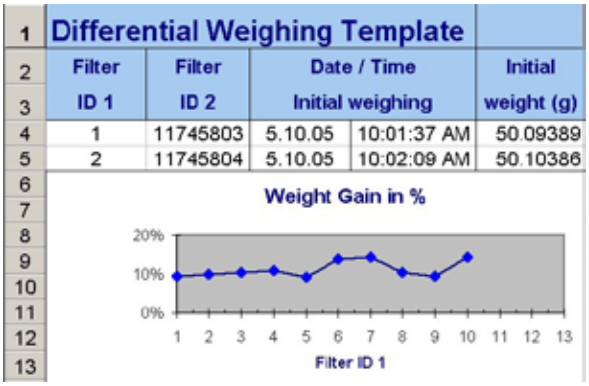
## Our solutions & your benefits

With **LabX**, our laboratory instrument control software, you can perform the following tasks at the same time:

- **No mistakes in the data transfer**: Eliminate manual data entry and transcription errors.
- **Automatically transfer data to EXCEL**: Define the fields to be exported and the layout in LabX.
- **Seamless documentation**: Date and time stamp, multiple sample IDs, user-definable results and control limits, balance settings etc.
- **Secured and accessible data**: All the data is stored in an SQL database, so no data is lost.
- **Instrument management**: Test and adjustment scheduler, calibration history, weights library.
- **Integrated application**: Statistics, Differential weighing, Dynamic weighing, Interval weighing, Totalization etc…

For details about data security and LIMS integration, please refer to chapter 1.4.

LabX balance - data and instrument management software



| | | | | |
|---|---|---|---|---|
| 1 | Differential Weighing Template | | | |
| 2 | Filter | Filter | Date / Time | Initial |
| 3 | ID 1 | ID 2 | Initial weighing | weight (g) |
| 4 | 1 | 11745803 | 5.10.05 10:01:37 AM | 50.09389 |
| 5 | 2 | 11745804 | 5.10.05 10:02:09 AM | 50.10386 |



Simple and flexible data transfer to EXCEL.

3.3

LabX

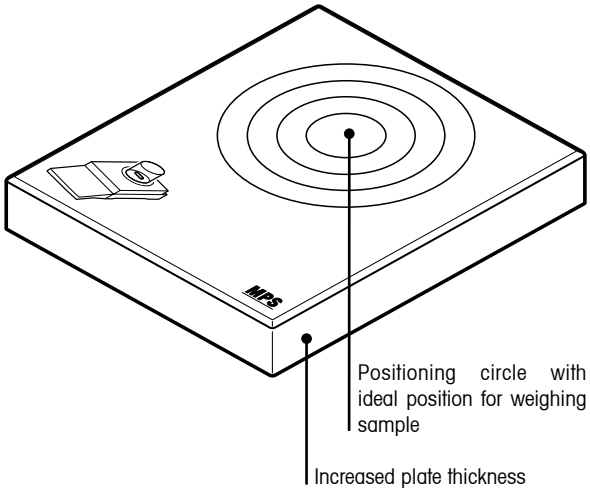
# 3.4 Do you weigh magnetic samples?

## Your challenges

When magnetic samples are weighed, or if a magnetic stirring rod is weighed with samples, the weighing result can deviate from the true weight value.

## Our solutions & your benefit

With a special **MPS** (**M**agnetic **P**rotection **S**hield) weighing pan, the magnetic effect can be reduced to a minimum. Even with magnetic samples, you can obtain reliable weighing results.



MPS (**M**agnetic **P**rotection **S**hield) weighing pan

3.4

**MPS Weighing Pan**

## Availability and ordering information

| Accessories for the following balances | MPS weighing pan | Part No. |
|---|---|---|
| For XP / XS Precision S-platform models, with a readability of 1 g and 0.1 g | 190 x 223 mm | 11131542 |
| For XP / XS Precision S-platform models, with a readability of 10 mg (also for DeltaRange models) | 170 x 205 mm | 11131541 |
| For other models, individual measures required (e.g. below-the-balance weighing) | n/a | n/a |

## Remarks

- The MPS pan cannot be used on the XP1202S balance.
- The capacity of the balance is reduced slightly due to the heavier weighing pan.

# 3.5 Are cables making a mess of your laboratory?

## Your challenges

- Your work space is cluttered by too many cables and peripherals, or space is limited.
- You would like to connect your balance to a PC, printer or other peripherals at the same time.

## Our solutions & your benefit

- With the optional **BTS** interface (**Bluetooth single point**), you can connect the balance to a PC, printer or other peripheral **wirelessly** up to 10 m. Cables are no longer necessary.
- With the optional **BT** interface (**Bluetooth multi point**), you can connect the balance to a PC, printer and other peripherals **wirelessly at the same time** (up to 6 peripherals).
- You can also isolate the balance in a laminar flow box or draft chamber, and acquire data by PC or printer wirelessly.

## Availability and functional overview

| Description | | XP | XS | Part No. |
|---|---|---|---|---|
| Optional interface | BTS (single point) | X | X | 11132535 |
| Optional interface | BT (multi point) | X | X* | 11132530 |
| Wireless printer | BT-P42 | X | X | 11132540 |
| Aux. wireless display | BT-BLD | X | X | 11132555 |

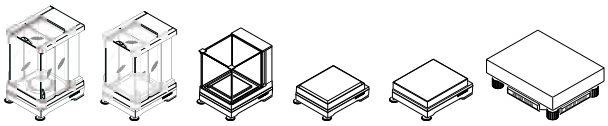
* only available from terminal software version 3.00
MT's Bluetooth accessories are certified by the official Bluetooth qualification body.
For more information visit www.bluetooth.com

**Bluetooth** Interface

# 3.6 Do you need a customized draft shield?

For **XP/XS Precision balances**, we offer a variety of draft shields. If you need a larger or more functional draft shield for your XP/XS Precision balance, simply choose the best draft shield from the following table.

## Availability overview

| Description | Size (mm) | Optional availability | | | | | | Part No. |
|---|---|---|---|---|---|---|---|---|
| | |  | | | | | | |
| | | XP-S | | XP/XS-S | | XP/XS-M | XP/XS-L | |
| | | 0.1 mg | 1 mg | 10 mg | 0.1 g | | | |
| ProDraft shield (standard for XP) | H: 247 mm | X | X | n/a | n/a | n/a | n/a | 11131651 |
| ProDraft shield, glass free (for food industry) | H: 247 mm | X | X | n/a | n/a | n/a | n/a | 11131652 |
| MagicCube draft shield (standard for XS) | H: 175 mm | n/a | X | n/a | n/a | n/a | n/a | 11131650 |
| Simple draft shield for 10 mg & 0.1 g models | H: 175 mm | n/a | n/a | X | X | n/a | n/a | 11131653 |
| Draft shield for whole balance (Medium) | W: 300 mm<br>D: 450 mm<br>H: 450 mm | n/a | X | X | X | X | n/a | 11134430 |
| Draft shield for whole balance (Large) | W: 550 mm<br>D: 470 mm<br>H: 580 mm | n/a | X | X | X | X | X | 11134470 |

* To use Simple draft shield for XP/XS 0.1 g models, you need to order the weighing pan 170 x 205 mm (11132660).

# 3.7 Future software upgrades?

The software in our Excellence balances is continuously being developed.
Upgrades to the Excellence balance software can be performed easily and is free of charge using our **"e-Loader"** installation software.
e-Loader is available on our **Balance Support Website** and can be downloaded quickly and easily. Please visit and register on:

▶ **http://www.mt.com/balance-support-registration**

**Ensures that your balance software is always the latest version!**

For customers using the balance in a regulated environment, we recommend you ask your local MT technical support to install new software and help with its validation.

The online software update is easily accessible from your local PC with a standard internet connection.

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METTLER TOLEDO

Text version 1.3

**Supplier Declaration for Excellence Plus XP Software Update**

Mettler-Toledo is certified according to ISO 9001. All products from Mettler-Toledo business unit Laboratory & Weighing Technologies are developed and manufactured based on the internationally recognized ISO 9001 quality system.

- The software is developed based on a life cycle model, using defined documentation, programming and test guidelines.
- All suppliers of system components must be formally assessed. Obviously standard products are an exception.
- The individual phases of the life cycle model and their working results are subject to a formal review (milestones).
- All documents and approved system components are subject to the modification check.

The platform software and terminal software for the XP balance line is in the Flash ROM on the motherboard on every balance. Both software types can be replaced if desired.

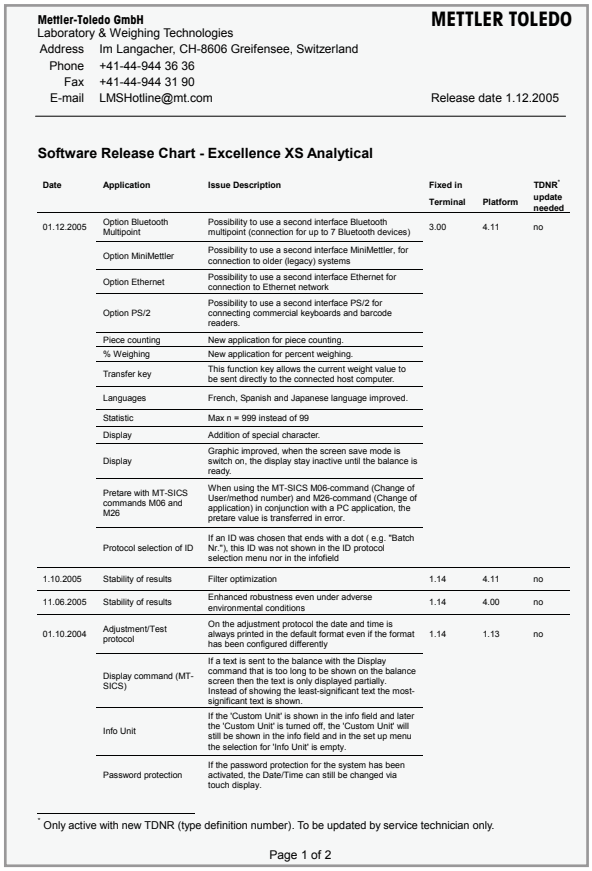
We confirm that the platform software version 4.11 and the terminal software 3.10 have been developed and tested according to the product development process described in the declaration of conformity. Important metrological data is stored separately in the EEPROM of the balance. This ensures that when the balance software is updated, metrological data cannot be modified intentionally or unintentionally.

The design is validated according to company-specific guidelines for the product and software development process. The relevant validation reports for these procedures and extensive documentation, such as source codes, can be viewed by arrangement.

On the support Website (http://lab.mt.com/support ) you find two lists, one which describe the known and corrected errors up to Version 3.10 for the Terminal and up to Version 4.11 for the platform, and the other one that shows the new functionalities that are implemented in comparison to previous software.
It should be noted that when new software versions are developed, only the modifications described in the Software Release Chart and their possible effects on the generation of the primary weight value are checked.
We cannot accept liability for any secondary effects caused by software modification.

Page 1 of 2

Supplier Declaration



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METTLER TOLEDO

Release date 1.12.2005

**Software Release Chart - Excellence XS Analytical**

| Date | Application | Issue Description | Fixed in Terminal | Fixed in Platform | TDNR* update needed |
|---|---|---|---|---|---|
| 01.12.2005 | Option Bluetooth Multipoint | Possibility to use a second interface Bluetooth multipoint (connection for up to 7 Bluetooth devices) | 3.00 | 4.11 | no |
| | Option MiniMettler | Possibility to use a second interface MiniMettler, for connection to older (legacy) systems | | | |
| | Option Ethernet | Possibility to use a second interface Ethernet for connection to Ethernet network | | | |
| | Option PS/2 | Possibility to use a second interface PS/2 for connecting commercial keyboards and barcode readers. | | | |
| | Piece counting | New application for piece counting. | | | |
| | % Weighing | New application for percent weighing. | | | |
| | Transfer key | This function key allows the current weight value to be sent directly to the connected host computer. | | | |
| | Languages | French, Spanish and Japanese language improved. | | | |
| | Statistic | Max n = 999 instead of 99 | | | |
| | Display | Addition of special character. | | | |
| | Display | Graphic improved, when the screen save mode is switch on, the display stay inactive until the balance is ready. | | | |
| | Pretare with MT-SICS commands M06 and M26 | When using the MT-SICS M06-command (Change of User/method number) and M26-command (Change of application) in conjunction with a PC application, the pretare value is transfered in error. | | | |
| | Protocol selection of ID | If an ID was chosen that ends with a dot ( e.g. "Batch Nr."), this ID was not shown in the ID protocol selection menu nor in the infofield | | | |
| 1.10.2005 | Stability of results | Filter optimization | 1.14 | 4.11 | no |
| 11.06.2005 | Stability of results | Enhanced robustness even under adverse environmental conditions | 1.14 | 4.00 | no |
| 01.10.2004 | Adjustment/Test protocol | On the adjustment protocol the date and time is always printed in the default format even if the format has been configured differently | 1.14 | 1.13 | no |
| | Display command (MT-SICS) | If a text is sent to the balance with the Display command that is too long to be shown on the balance screen then the text is only displayed partially. Instead of showing the least-significant text the most-significant text is shown. | | | |
| | Info Unit | If the 'Custom Unit' is shown in the info field and later the 'Custom Unit' is turned off, the 'Custom Unit' will still be shown in the info field and in the set up menu the selection for 'Info Unit' is empty. | | | |
| | Password protection | If the password protection for the system has been activated, the Date/Time can still be changed via touch display. | | | |

* Only active with new TDNR (type definition number). To be updated by service technician only.

Page 1 of 2

Software Release Chart

# 3.8 How soon can you expect to make a return on your investment?

You can appreciate that our **Excellence series** has the potential to enhance **your productivity and overall security** in weighing – security of the sample, of the result and of the user.
The following examples show a ROI calculation for the XS Analytical balance and XP Micro balance with optional accessories.
These examples should help you to estimate how fast your investment will pay for itself in your case. **Choosing an Excellence balance will certainly be a worthwhile investment!**

## When speed is of the essence

### A supplier for research-based chemical industry

### Your challenges

- Produce single compounds for novel hits in HTS assays.
- Weigh a series of samples of a predefined volume according to customers requirements.
- A lab technician fully dedicated to this task processes around 50 customer orders per day, with an average of 12 samples per order.
- The average weighing time contributes to 30% of the order. The speed of balance is the key for higher throughput.

### Our solution: Increase productivity through shorter weighing times

- **XS205DU:** Analytical balance with higher efficiency and productivity.
- **ErgoClip Basket** (Please refer chapter 2.2)

### Assumptions

| | |
|---|---|
| • Compound orders produced/day: | 50 |
| • Total time/order: | 9.6 min |
| • Weighing time/order: | 3 min |
| • Margin/order sold: | $ 21.00 |

**3.8**

**ROI Calculation Example**

### Return on investment: (using new XS205DU balance)

**1** Productivity increase/day: (**20% higher weighing speed**)

$$\frac{8 \text{ hours } (=480\text{min})}{(3 \text{ min} \times 80\%) + 6.6 \text{ min}} - 50 = 3.3 \text{ orders more/day}$$

**2** Margin increase/day: (**annualized**)

3 orders x $ 21.00 x 220 days = $ 13,860.00

**3** Initial investment: (**XS205DU**)

$ 5,700.00*

* Price may vary according to the market.

## Pay-back period: Less than 5 months

# When less is more

## A customer in the pharmaceutical industry

### Your challenges

- Weigh reference substances for developing chemical reference solutions to calibrate HPLC systems. Some substances have a value of several thousand Euros per gram.
- Generate as many reference solutions as possible from these precious substances, according to USP regulation.
- To minimize the cost per reference solution, sample sizes must be as small as possible and equal to or greater than the minimal sample weight (according to USP) determined for the balance in use.
- Currently, a semi-micro balance with 100g capacity and 0.01mg readability is used. To eliminate transfer errors, small amounts of samples are transferred directly into bigger tare containers (tare weights are about 10 - 30g).

### Our solution: Reduce the minimum sample weight

- **XP56 microbalance:** Micro balance with the highest capacity and security.
- **ErgoClip Flask micro** and **MinWeigh Door micro** (Please refer to 2.2).
- The **AntiStatic kit** for static charged sample (Please refer to 2.1).
- **MinWeigh** service (please refer to 1.2).

### Assumptions

- Minimum sample weight of the current analytical balance (Capacity 110g, Readability 0.01mg: 25mg
- Minimum sample weight of the XP56 microbalance (Capacity 52g, Readability 0.001mg: 8mg*
- Sample cost/mg (average): EUR 4.00
- Samplings/day (average): 2

* With smaller tare containers and optimal ambient conditions, the minimum sample weight value can be reduced down to 2.1mg, or even lower.

### Return on investment: (using new XP56 balance)

1. Lower consumption of reference substance/day: (**8mg - 25mg = -17mg**) — 17mg x 2 = 34 mg
2. Cost savings: (**annualized**) — 34mg x EUR 4.00 x 220 days = EUR 29'920.00
3. Initial investment: **(XP56 + Accessories & Service)** — EUR 21'670.00*

* Price may vary according to the market.

# Pay-back period: Less than 9 months

## What if...? Excellence XP: "Your insurance for secure results".

**Non-compliance** with defined maximum limits can have disastrous consequences **in a regulated environment**. The following cases may occur in your laboratory and could cause significant losses.

**The built-in warning functions of the XP range** can prevent or minimize various risks, leaving you to concentrate on weighing with peace of mind.

| What if... | Severe consequences | Our solution |
|---|---|---|
| **The balance was inclined** at some point, but measurements continued to be taken. | The SOP does not permit weighing without leveling; the data is regarded as "out of spec", and production has to be stopped... | **LevelControl** (Chapter 1.1) |
| Small samples were unintentionally measured **below minimum weight**. | Precious samples are lost, measurements must be repeated, but delivery of the sample material sometimes needs a couple of months. | **MinWeigh** (Chapter 1.2) |
| The weighing parameter settings, which can influence the precision of the weighing result, were accidentally changed by an operator. | Auditors found a disparity between the SOP and the actual settings on the balance. You are now asked to investigate the cause and effects... | **User Management** (Chapter 1.3) |

# 4. More flexible Connectivity

4

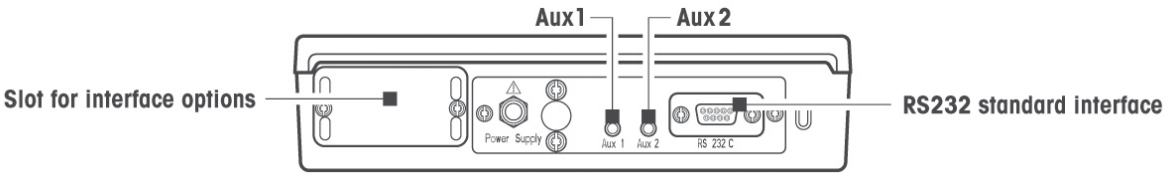
# 4.1 Do you connect your balance with other peripherals?

On **all Excellence balances** the fixed RS232 interface as well as one of the interface options below can be used simultaneously.
7 different optional interfaces are available. Independent of this, the two outputs Aux1 and Aux2 can also be used.

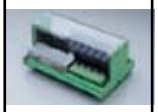
## Optional interfaces for Excellence series

| | | Availability | | |
|---|---|---|---|---|
| **Interface option** | **Part No.** | **XP** | **XS** | **Purpose** |
| LocalCAN (LC) | 11132505 | X | X | • 2nd interface for connection of up to 5 LC instruments<br>• For backwards compatibility (see chapter 4.2) |
| Bluetooth single point (BTS)* | 11132535 | X | X | • Bluetooth interface for wireless connection<br>• Point to point connection, 1 balance with 1 peripheral |
| Bluetooth multi point (BT)* | 11132530 | X | X | • Bluetooth interface for wireless connection<br>• Multi connection of 1 balance with up to 6 peripherals |
| RS232C (RS) | 11132500 | X | X | • 2nd interface for connection with RS232C peripherals<br>• e.g.: One RS for Host, the other for a Printer or Titrator |
| PS/2 | 11132520 | X | X | • 2nd interface for a commercial keyboard or barcode reader |
| MiniMettler (MM)* | 11132510 | X | X | • 2nd interface for backwards compatibility (see chapter 4.2) |
| Ethernet* | 11132515 | X | X | • 2nd interface for LAN connection |

* May not work with previous software versions. For further information please contact your local MT technical support.



## Connectivity with peripherals

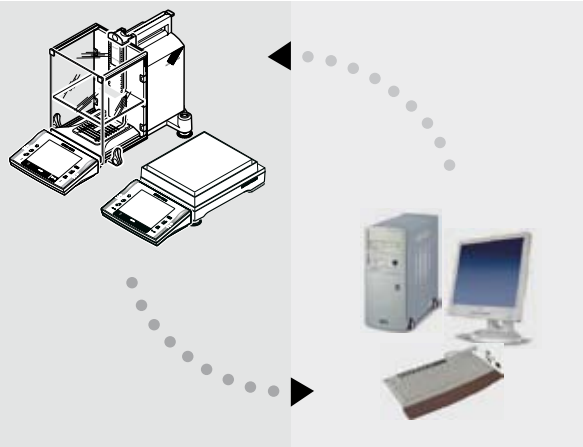
| METTLER TOLEDO and third-party devices | | Designation<br>Part No. | LC | BTS | BT | RS | PS/2 | MM | Ethernet | USB | Aux 1 & 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Barcode reader**<br>Information transmitted to the balance<br>AC adapter 230 V (EU)<br>AC adapter 115 V (USA) | **BCR-RS**<br>21900879<br>21900882<br>21900883 | 5 | | | 1 | | | | | |
| | | **BCR-PS/2**<br>21900880<br>**BCR-PS/2Y**<br>21900881 | | | | | 3 | | | | |
| | **Printer**<br>GLP, GMP printer with setting possibilities for header with time, date, identification and serial number | **BT-P42**<br>11132540 | | 2 | 2 | | | | | | |
| | | **RS-P42**<br>11132555 | 5 | | | 1 | | | | | |
| | **Auxiliary display as benchtop version**<br>BLD = LCD display, backlight<br>AD = Fluorescence display | **BT-BLD**<br>11132555 | | 2 | 2 | | | | | | |
| | **Auxiliary display as stand version**<br>BLDS = LCD display, backlight<br>AD = Fluorescence display | **RS/LC-BLDS**<br>11132630 | 4 | | | 1 | | | | | |
|  | **LC-IO Relay interface**<br>Input/output module for management of up to 8 dispensing or control systems<br>(only for XP). | **LC-IO**<br>21202217 | 4 | | | 1 | | | | | |
| | **LV11 Automatic feeder**<br>Automatic feeder for small items | **LV11**<br>21900608 | 4 | | | 1 | | | | | |
| | **LC-FS Foot/hand switch**<br>For operation of the balance by hand or foot,<br>1 selectable function | **LC-FS**<br>229060 | 3 | | | | | | | | |
| | **Footswitch for Aux 1 & 2**<br>Auxiliary footswitch with selectable functions for the balance | **Aux. Foot Switch**<br>11106741 | | | | | | | | | 3 |
| | **ErgoSens (optical sensor)**<br>Auxiliary interface with selectable function for the balance. For hands-free operation. | **ErgoSens**<br>1132601 | | | | | | | | | 3 |
| | **Laptop** | | 5 | 2 | 2 | 1 | | | 6 | * | |
| | **PC keyboard** | | | | | | 3 | | | | |
| | **Balances with MM interface** | | | | | | | 7 | | | |

*: RS/USB converter required (third-party device).
1: Cable 11101051 required
2: Wireless connection (Bluetooth)
3: Fixed cable
4: Cable 229116 (length = 5 m); additional cable: 229161 (length = 1 m), 229115 (length = 2 m)
5: It is possible to connect instruments having an RS interface with the LocalCan (LC) interface, using the cable LC-RS9: 229065 (length = 2 m)
6. LAN cable
7. Backwards compatibility to MiniMettler system.

## **MT-SICS** (METTLER TOLEDO – **S**tandard **I**nterface **C**ommand **S**et)

We offer the **standardized bidirectional commands** for METTLER TOLEDO balance called **"MT-SICS"**. You can integrate your balance into a system, and can operate the balance remotely or automatically using bidirectional commands.

Basic commands (e.g. "Sending weighing data", "Tare the balance", "Zeroing" etc…) are identical among the entire METTLER TOLEDO balance ranges. For details of the bidirectional commands, please refer to the **"Operating instructions Excellence MT-SICS"** (visit **www.mt.com** and search using the keyword "MT-SICS").



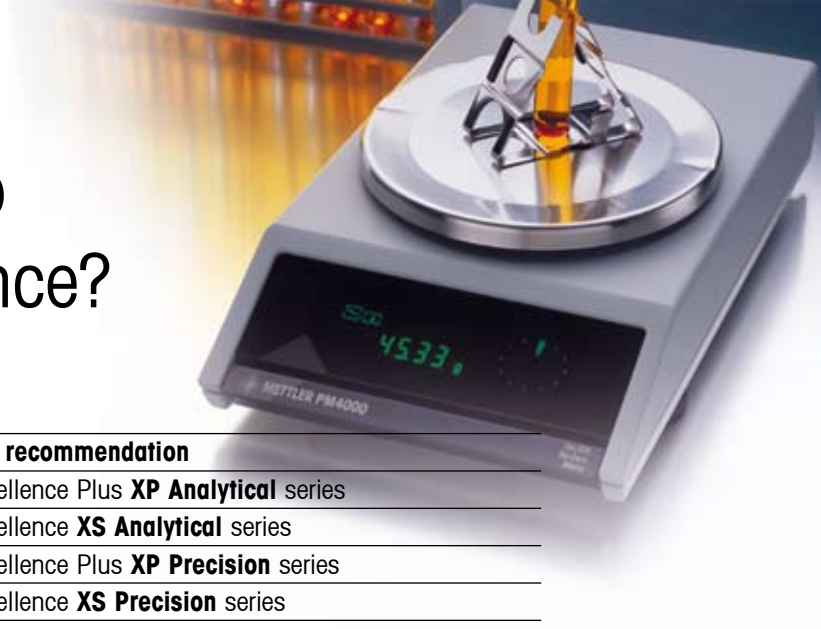
## Notes

For older generations of METTLER TOLEDO balances, certain bidirectional commands might not be supported by XP/XS balances, even with a LC or MM interface. To ensure compatibility, we recommend consulting your local MT technical support to verify that the commands which are used in your current system are fully supported in the **MT-SICS commands** of XP/XS balances.

## LIMS integration and 21 CFR Part 11 compliance with LabX pro

LabX is the laboratory instrument control & data management software from METTLER TOLEDO for **Balances** and **Titrators**. There are 3 levels of LabX: pro, light and direct. For more detailed information, please see chapter 1.4.

# 4.2 Are you about to replace your old balance?



## Recommended replacement models

| Your balance | Our recommendation |
|---|---|
| **AE, AT, AX** series | Excellence Plus **XP Analytical** series |
| **AE, AG** series | Excellence **XS Analytical** series |
| **PM, PR, SR** series | Excellence Plus **XP Precision** series |
| **PM, PJ, PE, PG-S, SG** series | Excellence **XS Precision** series |

* Recommended models will vary depending on your specific weighing application or regulatory requirements. Please consult your local MT representative to choose the right balance for you.

## Backward compatibility for system integration

When it comes to replacing your old METTLER TOLEDO balance which is integrated into your system, please make sure that the same type of interface is available. If your balance has a LocalCAN or a MiniMettler interface, you may have to install optional interfaces in order to integrate the Excellence series into your existing system.

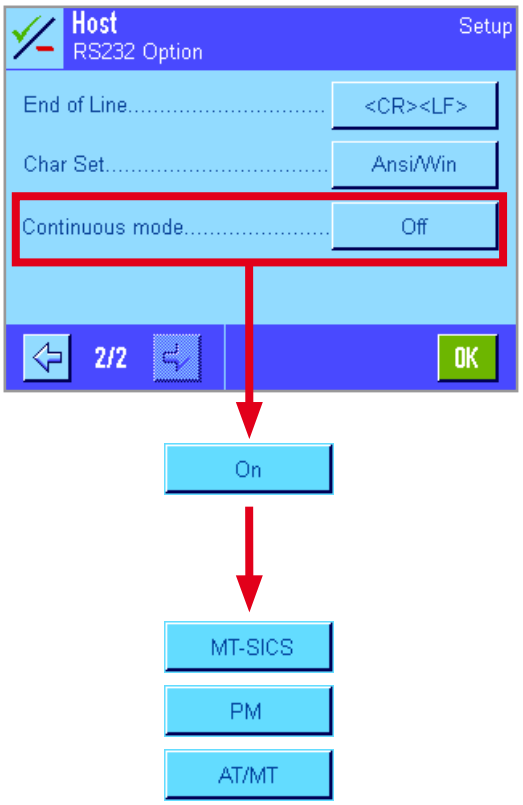
| Your MT balance | Standard interface | Required optional interface for XP/XS | Part No. |
|---|---|---|---|
| AG, PG, PR, SR series[1)], etc... | LocalCAN (LC) | LC option for XP/XS | 11132505 |
| AT, PM, PJ, PE series[1)], etc... | MiniMettler (MM) | MM option for XP/XS [2)] | 11132510 |

1) The standard interface of each model may vary according to the production period. If it is difficult to identify the interface type of your balance, please ask your local MT technical support. 2) For the compatibile functionality of MM option for XP/XS with older balance, please refer operating instructions or ask your local MT techinical suport.

## Continuous mode

The **XP/XS** has 3 continuous modes* for **"MT-SICS", "AT/MT" and "PM"**. You may use continuous mode with your AT or PM balance. If you replace an AT or PM with an XP/XS balance, you do not need to purchase the optional MiniMettler interface. In the peripherals setting menu, "Continuous mode" can be selected. The balance will send weighing data periodically and automatically, with an identical data output format than the AT or PM balance.

* Continuous mode: Sends weighing data periodically and automatically via Host mode.




3 different continuous modes are selectable

4.2

Replacement Models & Backward Compatibility

# 4.3 Do you want to use a USB interface?

## USB interface

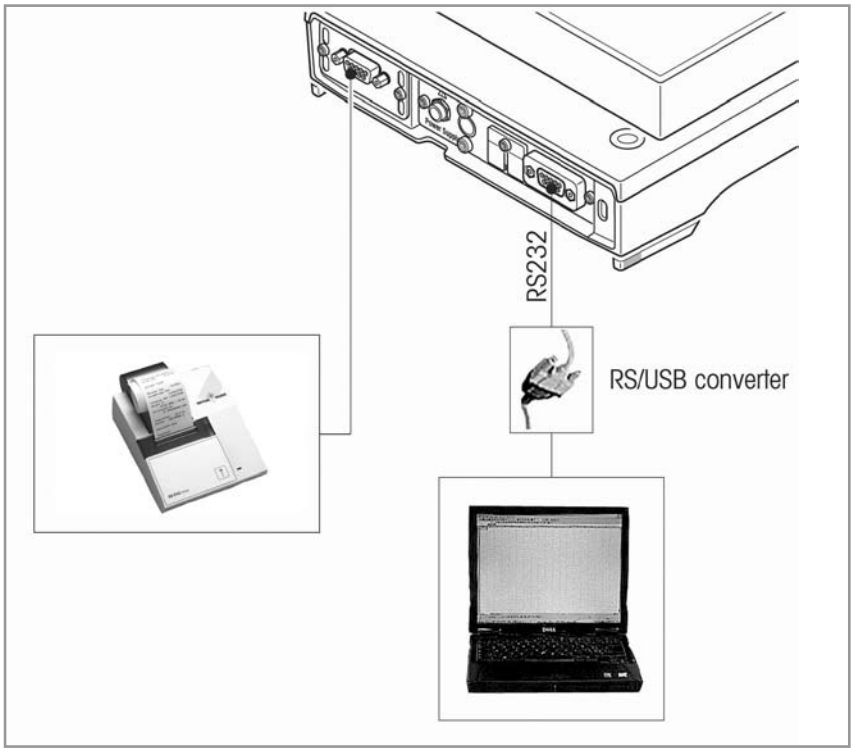
Can computers with a **USB interface** be connected to METTLER TOLEDO **Excellence balances**?
Yes, all computers equipped with a USB interface can be connected to a METTLER TOLEDO Excellence balance using a "standard USB to RS converter", which is connected to the balance's RS232 interface. The full functionality of the classic RS-RS connection remains available.

## Availability

USB to RS232 converters are country-specific products, requiring the installation of software on the computer. This software is supplied together with the converter. We recommend that the converter is purchased at your local electronic or PC supplier. We also recommend you consult your local MT technical support in order to check which converter has been tested locally and is therefore recommended for use with **Excellence balances**.

## Example of connecting a laptop PC and a METTLER TOLEDO printer with a USB interface

The most common way to set up such a system is outlined below. Please refer to the drawing.




## Disclaimer

METTLER TOLEDO cannot guarantee the performance of third party products. It is therefore the responsibility of the customer to validate correct system operation and integration. Validation support and services are available from METTLER TOLEDO.

# 4.4 Do you connect your balance to a titrator?

## Connection to titrator

A titrator is one of the most common instruments to be connected to a balance.
The following information shows how to configure **XP/XS balances** to be connected to METTLER TOLEDO Titrators.

### 1. Connection of XP/XS to actual MT-titrators

| **Titrator** | **DL70ES/77** | | **DL50/53/58** | | **DL31/38 & DL32/39** | |
|---|---|---|---|---|---|---|
| Software Version | 3.1 | | 2.4 | | 2.12 | |
| Titrator Interface | CL20mA | | RS232 | | RS232 fixed | |
| Communication | Unidirectional | Bidirectional | Unidirectional | Bidirectional | Unidirectional | Bidirectional |
| Configuration (fix) | 2400, 7bit, even, no HS | | 2400, 7bit, even, no HS | | 2400, 7bit, even, no HS | |

| **Interfaces used** | Converter LC-CL5 | Cable MM-CL5 | Converter LC-CL5 | Cable RS9-RS9 | Converter LC-RS9 | Cable RS9-RS9 | Converter LC-RS9 | Cable RS9-RS9 | Converter LC-RS9 | | Converter LC - RS9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cable / Converter Part No. | ME229130 | | ME229130 | ME11101051 | ME229065 | ME11101051 | ME229065 | ME11101051 | ME229065 | | ME229065 |
| Switch Settings | * 7 - 3 - 4 (continuous) (2400, 7/E, noHS) | | * 0 - 3 - 4 (2400, 7/E, noHS) | | * 7 - 3 - 4 (continuous) (2400, 7/E, noHS) | | * 0 - 3 - 4 (2400, 7/E, noHS) | | * 7 - 3 - 4 (continuous) (2400, 7/E, noHS) | | * 0 - 3 - 4 (2400, 7/E, noHS) |

| **Balance Interface** | LC-Option | MM-Option | LC-Option | RS232 fix | LC-Option | RS232 fix or RS-Option | LC-Option | RS232 fix | LC-Option | RS232 fix or RS - Option | LC - Option |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Configuration | Second display: LC-Option | Host: RS-Option | Host: LC-Option | Host: RS232 fix | Second display: LC-Option | Host: RS232 fix or RS-Option | Host: LC-Option | Host: RS232 fix | Second display: LC-Option | Host: RS232 fix or RS-Option | Host: LC-Option |
| Baudrate | * LC-Option | 2400 | * LC-Option | 2400 | * LC-Option | 2400 | * LC-Option | 2400 | * LC-Option | 2400 | * LC-Option |
| Parity | | 7bit/even/1 | | 7bit/even/1 | | 7bit/even/1 | | 7bit/even/1 | | 7bit/even/1 | |
| Handshake | | None | | None | | Xon/Xoff | | None | | Xon/Xoff | |
| Send mode | | continuous | | continuous | | off | | continuous | | off | |
| Output-Format | | AT | | MT-SICS, PM, or AT | | | | MT-SICS, PM, or AT | | | |
| Update/sec | | 5 | | 5 | | | | 5 | | | |
| Weight obtained by | Cont.-mode | Cont.-mode | Titrator | Cont.-mode | Cont.-mode | Titrator | Titrator | Cont.-mode | Cont.-mode | Titrator | Titrator |

### 2. Connection of XS/XP to older MT-titrators

| **Titrator** | **DL18/35** | **DL21/25** | **DL37** | |
|---|---|---|---|---|
| Software Version | 1.2 | 1.2 | 3.2 | |
| Titrator Interface | CL20mA | CL20mA | "Balance" | |
| Communication | Unidirectional | Unidirectional | Unidirect. | Bidirectional |
| Configuration (fix) | 2400, 7bit, even, no HS | 2400, 7bit, even, no HS | 2400, 7bit, even, no HS | |

| **Interfaces used** | CLC-CL5 | Cable MM-CL5 | LC-CL20 | Cable MM-CL5 | Cable Balance-RS | | Converter LC-RS9 |
|---|---|---|---|---|---|---|---|
| Cable / Converter Part No. | ME229130 + ME106090 | | ME229130 + ME106090 | | ME59759 + Gender Changer DB9 male-male | | ME229065 |
| Switch Settings | * 7 - 3 - 4 (continuous) (2400, 7/E, noHS) | | * 7 - 3 - 4 (continuous) (2400, 7/E, noHS) | | | | |

| **Balance Interface** | LC-Option | MM-Option | LC-Option | MM-Option | RS232 fix | RS232 fix or RS-Option | LC-Option |
|---|---|---|---|---|---|---|---|
| Configuration | Second display: LC-Option | Host: MM-Option | Second display: LC-Option | Host: MM-Option | Host: RS232 fix | Host: RS232 fix or RS-Option | Host: LC-Option |
| Baudrate | * LC-Option | 2400 | * LC-Option | 2400 | 2400 | 2400 | * LC-Option |
| Parity | | 7bit/even/1 | | 7bit/even/1 | 7bit/even/1 | 7bit/even/1 | |
| Handshake | | None | | None | None | Xon/Xoff | |
| Send mode | | continuous | | continuous | continuous | | |
| Output-Format | | AT | | AT | AT | | |
| Update/sec | | 5 | | 5 | 5 | | |
| Weight obtained by | Cont.-mode | Cont.-mode | Cont.-mode | Cont.-mode | Cont.-mode | Titrator | Titrator |

Notes: Weight transfer with Printkey (in Printer-mode) not recommended: Titrator only accepts gross weights in grams.
Other weight Units, Net-Weights or Weight results from approved balances are rejected by the titrator.

## Connection to a titrator using LabX

With LabX, the instrument control software, you can integrate both **titrators** and **balances** into the same network, and can connect them to a LIMS for comprehensive data management. For more information, please refer to chapter 1.4.

* For setting up **XP/XS balances** with other titrator brands, please contact your local MT technical support.

# Your personal notes

# 5. Comprehensive Range
## of Accessories

5

# 5.1 Accessories overview
## for Excellence series

| Description | | Part No. | XP Analytical | XS Analytical | XP Precision | XS Precision |
|---|---|---|---|---|---|---|
| Sensors | ErgoSens, optical Sensor for hands-free operation | 11132601 | X | X | X | X |
| Weighing pans | MPS (Magnetic Protection Shield) for 0.1 g models 190 mm x 223 mm | 11132625 | n/a | n/a | X | X |
| | MPS (Magnetic Protection Shield) for 10 mg models 170 mm x 205 mm | 11132626 | n/a | n/a | X | X |
| | Weighing pan 190 x 223 mm, incl. pan support | 11132655 | n/a | n/a | X | X |
| | Weighing pan 170 x 205 mm, incl. pan support and draft ring | 11132660 | n/a | n/a | X | X |
| Draft shields | Pro Draft Shield for 1 mg models, effective height 248 mm | 11131651 | n/a | n/a | X | X |
| | Draft Shield glass free for 0.1 mg and 1 mg models (food industry), effective height 248 mm | 11131652 | n/a | n/a | X | X |
| | Draft Shield for 0.1 g and 10 mg models, effective height 175 mm | 11131653 | n/a | n/a | X | X |
| | MagicCube draft shield for 1 mg models, effective height 175 mm | 11131650 | n/a | n/a | X | X |
| | Draft Shield for whole balance (S & M platform, dimensions (W x D x H) 300 x 450 x 450 mm | 11134430 | n/a | n/a | X | X |
| | Draft Shield for whole balance (L platform), dimensions (W x D x H) 550 x 470 x 580 mm | 11134470 | n/a | n/a | X | X |
| Printer | BT-P42 printer with wireless Bluetooth connection to balance | 11132540 | X | X | X | X |
| | RS-P42 printer with RS232C connection to balance | 229265 | X | X | X | X |
| Optional interfaces | BT option: 2nd interface Bluetooth, wireless multipoint connection for up to 6 Bluetooth devices | 11132530 | X | X | X | X |
| | BTS option: 2nd interface Bluetooth, wireless point-to-point connection | 11132535 | X | X | X | X |
| | Ethernet option: 2nd interface Ethernet for connection to Ethernet network | 11132515 | X | X | X | X |
| | E-link IP65 EB01: Ethernet connection to the e-link network with IP65 protection | 11120003 | X | X | X | X |
| | PS/2 option: 2nd interface for connecting commercial keyboards and barcode readers | 11132520 | X | X | X | X |
| | RS232C option: 2nd interface for connection of a printer (RS-P42), computer or titrator | 11132500 | X | X | X | X |
| | LocalCAN option: 2nd interface for connection of up to five LC (LocalCAN) instruments | 11132505 | X | X | X | X |
| | MiniMettler option: 2nd interface MiniMettler, for connection to older (legacy) systems | 11132510 | X | X | X | X |

| Description | | Part No. | XP Analytical | XS Analytical | XP Precision | XS Precision |
|---|---|---|---|---|---|---|
| Protective covers | Protective cover for XP terminal (terminal only) | 11132570 | X | n/a | X | n/a |
| | Protective cover for XS terminal (terminal only) | 11106870 | n/a | X | n/a | X |
| | Protective cover for weighing platform "S", 10 mg / 0.1 g models (platform only) | 11133034 | n/a | n/a | X | X |
| | Protective cover for weighing platform "M" (platform only) | 11132574 | n/a | n/a | X | X |
| | Protective cover for XS balance with "S" platform, 10 mg / 0.1 g models (whole balance) | 11132571 | n/a | n/a | n/a | X |
| | Protective cover for XS balance with "M" platform (whole balance) | 11132572 | n/a | n/a | n/a | X |
| | Protective cover for XS terminal attached to a "L" platform (terminal only) | 11132573 | n/a | n/a | n/a | X |
| Stands and wall mounting | Terminal stand for placement of the terminal 30 cm above weighing pan (S & M Platform) | 11132636 | n/a | n/a | X | X |
| | Terminal stand for placement of the terminal 30 cm above weighing pan (L Platform) | 11132653 | n/a | n/a | X | X |
| | Stand for Terminal and Printer | 11106730 | X | X | n/a | n/a |
| | Terminal wall mounting | 11132665 | X | X | X | X |
| ErgoClips | ErgoClip Basket small | 11106747 | X | X | n/a | n/a |
| | ErgoClip Titration Basket | 11106883 | X | X | n/a | n/a |
| | ErgoClip Weighing Boat | 11106748 | X | X | n/a | n/a |
| | ErgoClip Round Bottom Flask | 11106746 | X | X | n/a | n/a |
| | ErgoClip Flask | 11106764 | X | X | n/a | n/a |
| | MinWeigh Door (ideal to use with "ErgoClip Flask") | 11106749 | X | X | n/a | n/a |
| | ErgoClip Flask micro (for XP micro balances only) | 11107879 | X | n/a | n/a | n/a |
| | MinWeigh Door micro (for XP micro balances only, ideal to use together with "ErgoClip Flask micro") | 11107869 | X | n/a | n/a | n/a |
| | ErgoClip Tube | 11106784 | X | X | n/a | n/a |
| | Single-use aluminum weighing pan (10 pans) | 11106711 | X | X | n/a | n/a |
| | Weighing Kit - Set of ErgoClips (Basket small, Weighing Boat, Round Bottom Flask and Single use aluminum pans are included) | 11106707 | X | X | n/a | n/a |
| AC adapter protection | IP54 AC adapter protection cover | 11132550 | X | X | X | X |
| Anti-theft device | Steel cord | 11600361 | X | X | X | X |
| Terminal cable | Terminal extension cable, 4.5 m | 11600517 | X | X | X | X |
| Density kit | Density kit for precision balances, 1 mg and 0.1 mg models | 11132680 | n/a | n/a | X | X |
| | Density kit for all analytical balances | 11106706 | X | X | n/a | n/a |
| | Certified thermometer for density determination | 11132685 | X | X | X | X |
| | Sinker 10 ml: for density determination of liquids | 210260 | X | X | X | X |
| | Sinker 10 ml, certified model | 210672 | X | X | X | X |
| Dynamic weighing kit | Dynamic weighing kit for 0.1 mg and 10 mg models, 4 liter bowl | 11132657 | n/a | n/a | X | X |

| Description | | Part No. | XP Analytical | XS Analytical | XP Precision | XS Precision |
|---|---|---|---|---|---|---|
| Auxiliary displays | BT-BLD Bluetooth aux. display for benchtop mounting. Wireless connection. Backlit LCD display. | 11132555 | X | X | X | X |
| | RS/LC-BLDS auxiliary display for benchtop mounting or on balance. Backlit LCD display. | 11132630 | X | X | X | X |
| | LC-AD auxiliary display on benchtop stand with fluorescent display | 229140 | X | X | X | X |
| | LC-ADS auxiliary display on high benchtop stand with fluorescent display | 229150 | X | X | X | X |
| | LC/RS-BLD auxiliary display on benchtop stand with backlit LC display | 224200 | X | X | X | X |
| Barcode reader | RS232C barcode reader | 21900879 | X | X | X | X |
| | AC adapter for barcode reader 230 V EUR | 21900882 | X | X | X | X |
| | AC adapter for barcode reader 115 V USA | 21900883 | X | X | X | X |
| | PS/2 barcode reader | 21900880 | X | X | X | X |
| | PS/2Y barcode reader | 21900881 | X | X | X | X |
| Filling-process control | LV11 small-item transporter for automatic loading of small items on the balance | 21900608 | X | X | X | X |
| | LV11 Draft shield door "Pro" for 0.1 mg and 1 mg models | 11132711 | n/a | n/a | X | X |
| | LV11 Draft shield door for all analytical balances | 11106715 | X | X | n/a | n/a |
| LC-I/O Box | Relay interface for control of up to 8 external instruments from the balance | 21202217 | X | n/a | X | n/a |
| LC-Footswitch | Auxiliary footswitch with selectable function for the balance | 11106741 | X | X | X | X |
| | LC-FS with selectable function | 229060 | X | X | X | X |
| | Switchbox, connect up to 3 balances with LocalCan interface to a printer | 229220 | X | X | X | X |
| Transport case | Transport case for precision balances, 10 mg / 0.1 g models. With space for printer. | 11132595 | n/a | n/a | X | X |
| | Transport case for all analytical balances | 11106873 | X | X | n/a | n/a |
| XP-SE-kit | Separate electronic kit for XP analytical balances | 11106743 | X | n/a | n/a | n/a |
| | Extension cable 0.6 m | 211535 | X | n/a | n/a | n/a |
| | Extension cable 5 m | 210688 | X | n/a | n/a | n/a |
| PC Volume | PC Volume software (Option 1) | 21900791 | X | X | n/a | n/a |
| | Evaporation trap and PC Volume software (Option 3) | 21901263 | X | X | n/a | n/a |
| | Evaporation trap (Option 2) | 21901264 | X | X | n/a | n/a |
| AntiStatic kit | Built-in AntiStatic Kit for XP analytical balances, complete with power supply | 11107761 | X | n/a | n/a | n/a |
| | Optional second point-electrode for AntiStatic Kit | 11107762 | X | n/a | n/a | n/a |
| | Universal AntiStatic kit complete (U-kit) | 11107767 | X | X | X | X |
| | Optional U-electrode for universal AntiStatic kit | 11107764 | X | X | X | X |
| | Optional point-electrode for universal AntiStatic kit | 11107765 | X | X | X | X |
| | Power supply for universal AntiStatic kit (requires optional electrode) | 11107766 | X | X | X | X |
| Production certificate | Pro production certificate for XS balances | 11106895 | incl. | X | incl. | X |

| Description | | | Part No. | XP Analytical | XS Analytical | XP Precision | XS Precision |
|---|---|---|---|---|---|---|---|
| Hook below the balance | Hook for weighing below balance with "M" or "L" platform (integral to "S" platform) | | 11132565 | n/a | n/a | X | X |
| LabX balance | LabX pro balance | English | 11120301 | X | X | X | X |
| | | German | 11120302 | X | X | X | X |
| | | French | 11120303 | X | X | X | X |
| | LabX light balance | English | 11120317 | X | X | X | X |
| | | German | 11120318 | X | X | X | X |
| | | French | 11120319 | X | X | X | X |
| | LabX direct balance | English | 11120340 | X | X | X | X |
| | Validation handbook I | English | 11120332 | X | X | X | X |
| | Validation handbook II | English | 11120333 | X | X | X | X |

# Your personal notes

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